

ABSTRACT OF THE DISCLOSURE

A hologram recording medium, a hologram recording method and a recording and reproducing apparatus are capable of recording an interference pattern onto a volume holographic memory at high density. In a hologram recording method for forming a plurality of areas of a refractive index grating corresponding to one portion of a three-dimensional light interference pattern of a coherent signal light beam and coherent reference light of a first wavelength modulated in accordance with information data within a recording medium made of a photo refractive crystal of a uniaxial crystal having a shape of parallel flat plates, the signal light beam and the recording reference light beam cross each other within the recording medium, and a gate light beam having a second wavelength for revealing recording sensitivity of the recording medium is simultaneously irradiated to the recording medium so as to pass through a portion of the recording medium for crossing the signal light beam and the recording reference light beam and demarcate a volume smaller than that of this crossing portion. In a reproducing step a reproducing reference light beam is generated by reflecting the recording reference light beam in the vicinity of the beam waist of the recording reference light beam.

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